
Utilities Migration Information

This document contains migration information for the XSI utilities in XCU, Issue 5. Each section lists the synopsis and identifies syntax and semantic changes made to the interface in Issue 5 (if any).

admin

Create and administer SCCS files. **(DEVELOPMENT)**

```
admin -i[name][-n][-a login][-d flag][-f flag][-m mrlist]
      [-r rel][-t[name][-y[comment]] newfile
admin -n[-a login][-d flag][-f flag][-m mrlist][-t[name]][-y[comment]]
      newfile ...
admin [-a login][-d flag][-m mrlist][-r rel][-t[name]]
      file ...
admin -h file ...
admin -z file ...
```

Issue 5: No functional changes in this issue.

alias

Define or display aliases.

```
alias [alias-name[=string] ...]
```

Issue 5: No functional changes in this issue.

ar

Create and maintain library archives.

```
ar -d[-v][-l] archive file ...
ar -m[-abilv][posname] archive file ...
ar -p[-v][-s]archive [file ...]
ar -q[-clv] archive file ...
ar -r[-cuv][-abil][posname]archive file ...
ar -t[-v][-s]archive [file ...]
ar -x[-v][-sCT]archive [file ...]
```

Issue 5: A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

asa

Interpret carriage-control characters.

`asa [file ...]`

Issue 5: No functional changes in this issue.

at

Execute commands at a later time.

`at [-m][-f file][-q queueName] -t time`

`at [-m][-f file][-q queueName] timespec ...`

`at -r at_job_id ...`

`at -l -q queueName`

`at -l [at_job_id ...]`

Issue 5: No functional changes in this issue.

awk

Pattern scanning and processing language.

`awk [-F ERE][-v assignment] ... program [argument ...]`

`awk [-F ERE] -v progfile] ... [-v assignment] ...[argument ...]`

Issue 5: A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

basename

Return non-directory portion of a pathname.

`basename string [suffix]`

Issue 5: No functional changes in this issue.

batch

Execute commands when the system load permits.

`batch`

Issue 5: No functional changes in this issue.

bc

Arbitrary-precision arithmetic language.

`bc [-l] [file ...]`

Issue 5: A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

bg

Run jobs in the background.

```
bg [job_id ...]
```

Issue 5: No functional changes in this issue.

c89

Compile standard C programs.

```
c89 [-c][-D name[=value]][...][-E][-g][-I directory] ... [-L directory]
... [-o outfile][-O][-s][-U name][...] operand ...
```

Issue 5: In the **Standard Libraries** subsection, the *-l pthread* and *-l rt* operands are added. Specifically, the changed parts of this section are:

-l pthread This operand makes visible all functions referenced in **<pthread.h>** and *pthread_atfork()* referenced in **<unistd.h>**.

-l rt This operand makes visible all functions referenced in **<aio.h>**, **<mqueue.h>**, **<sched.h>**, and **<semaphore.h>**, and those functions marked as POSIX Realtime Extensions in **<sys/mman.h>** and **<time.h>**.

A new section on supported programming environments is added. This is for data size neutrality and support for 64-bit environments.

All implementations will support one or more of the following programming environments. Applications should use *sysconf()* or *getconf* to determine which programming environments are supported.

Programming Environment <i>getconf</i> Name	Bits in int	Bits in long	Bits in pointer	Bits in off_t
XBS5_ILP32_OFF32	32	32	32	32
XBS5_ILP32_OFFBIG	32	32	32	≥64
XBS5_LP64_OFF64	32	64	64	64
XBS5_LPBIG_OFFBIG	≥32	≥64	≥64	≥64

Table 0-1 Programming Environments: Type Sizes

Implementations provide configuration strings for C compiler flags, linker/loader flags, and libraries for each supported environment. When an application needs to use a specific programming environment rather than the implementation default programming environment while compiling, the application must first verify that the implementation supports the desired environment. If the desired programming environment is supported, the application must then invoke *c89* with the appropriate C compiler flags as the first options for the compile, the appropriate linker/loader flags after any other options but before any operands, and the appropriate libraries at the end of the operands.

Portable applications must not attempt to link together object files compiled for different programming models. Applications must also be aware that binary data placed in shared memory or in files might not be recognized by applications built for other programming models.

Programming Environment <i>getconf</i> Name	Use	<i>c89</i> and <i>cc</i> Arguments <i>getconf</i> Name
XBS5_ILP32_OFF32	C Compiler Flags Linker/Loader Flags Libraries	XBS5_ILP32_OFF32_CFLAGS XBS5_ILP32_OFF32_LDFLAGS XBS5_ILP32_OFF32_LIBS
XBS5_ILP32_OFFBIG	C Compiler Flags Linker/Loader Flags Libraries	XBS5_ILP32_OFFBIG_CFLAGS XBS5_ILP32_OFFBIG_LDFLAGS XBS5_ILP32_OFFBIG_LIBS
XBS5_LP64_OFF64	C Compiler Flags Linker/Loader Flags Libraries	XBS5_LP64_OFF64_CFLAGS XBS5_LP64_OFF64_LDFLAGS XBS5_LP64_OFF64_LIBS
XBS5_LPBIG_OFFBIG	C Compiler Flags Linker/Loader Flags	XBS5_LPBIG_OFFBIG_CFLAGS XBS5_LPBIG_OFFBIG_LDFLAGS

Table 0-2 Programming Environments: *c89* and *cc* Arguments**cal**

Print a calendar.

```
cal [[month] year ]
```

Issue 5: No functional changes in this issue.

calendar

Reminder service. (**LEGACY**)

```
calendar
```

Issue 5: This utility is marked LEGACY and may not be available on all implementations. A portable application should not use the *calendar* utility.

cancel

Cancel printer requests. (**LEGACY**)

```
cancel [ID ...] printer ...
```

```
cancel ID ...[printer ...]
```

Issue 5: This utility is marked LEGACY and may not be available on all implementations. A portable application should not use the *cancel* utility.

cat

Concatenate and print files.

```
cat [-u][file ...]
```

Issue 5: No functional changes in this issue.

cc

A C-language compilation system. (**LEGACY**)

```
cc [-c][-C][-e epsym] [-D name[=value]]... [-E][-f][-F][-g]
    [-I directory]... [-L directory]... [-o outfile][-O][-p][-P]
    [-q][-r][-s][-S][-u symname]... [-U name]... [-W options]...
    operand...
```

Issue 5: The EXTENDED DESCRIPTION is changed to reference *c89* for standard libraries.

This utility is marked LEGACY and may not be available on all implementations. The intent of marking *cc* LEGACY is to highlight the fact that portable shell scripts should use *c89* to ensure they are using a Standard C compiler.

cd

Change the working directory.

```
cd [directory]
cd -
```

Issue 5: No functional changes in this issue.

cflow

Generate a C-language flowgraph. (**DEVELOPMENT**)

```
cflow [r][-d num][-D name[=def]] ... [-i incl][-I dir] ... [-U dir] ...
    file ...
```

Issue 5: No functional changes in this issue.

chgrp

Change the file group ownership.

```
chgrp [-R] group file ...
```

Issue 5: No functional changes in this issue.

chmod

Change the file modes.

```
chmod [-R] mode file...
```

Issue 5: No functional changes in this issue.

chown

Change the file ownership.

```
chown [-R] owner[:group] file ...
```

Issue 5: No functional changes in this issue.

cksum

Write file checksums and sizes.

```
cksum [file ...]
```

Issue 5: No functional changes in this issue.

cmp

Compare two files.

```
cmp [ -l | -s ] file1 file2
```

Issue 5: No functional changes in this issue.

col

Filter reverse line-feeds. (**LEGACY**)

```
col [-bfpX]
```

Issue 5: This utility is marked LEGACY and may not be available on all implementations. A portable application should not use the *col* utility.

comm

Select or reject lines common to two files.

```
comm [-123] file1 file2
```

Issue 5: No functional changes in this issue.

command

Execute a simple command.

```
command [-p] command_name [argument ...]
```

```
command [ -v | -V ] command_name
```

Issue 5: No functional changes in this issue.

compress

Compress data.

```
compress [-fv][-b bits][file ...]
```

```
compress [-cfv][-b bits][file]
```

Issue 5: No functional changes in this issue.

cp

Copy files.

```
cp [-fip] source_file target_file
```

```
cp [-fip] source_file ... target
```

```
cp -R[-fip] source_file ... target
```

```
cp -r[-fip] source_file ... target
```

Issue 5: No functional changes in this issue.

cpio

Copy file archives in and out. (**LEGACY**)

```
cpio -o[aBcv]
```

```
cpio -i[Bcdmrtuvf] [pattern ...]
```

```
cpio -p[adlmuv] directory
```

Issue 5: A note is added to the Application Usage section indicating that *cpio* will only archive files up to 8 gigabytes in size.

This utility is marked LEGACY and may not be available on all implementations. A portable application should not use the *cpio* utility, and should instead use *pax*.

crontab

Schedule periodic background work.

```
crontab [file]
```

```
crontab [ -e | -l | -r ]
```

Issue 5: No functional changes in this issue.

csplit

Split files based on context.

```
csplit [-ks][-f prefix][-n number] file arg1 ...argn
```

Issue 5: A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

ctags

Create a tags file. (**DEVELOPMENT, FORTRAN**)

```
ctags [-a][-f tagsfile] pathname ...
```

```
ctags -x pathname ...
```

Issue 5: A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

cu

Call another system. (**LEGACY**)

```
cu -n[-dht] [-o | -e ][-l line][-s speed]
```

```
cu [-dht] [-o | -e ][-l line][-s speed] telno
```

```
cu [-dht] [-o | -e ][-s speed] -l line
```

```
cu [-dht] [-o | -e ] systemname
```

Issue 5: This utility is marked LEGACY and may not be available on all implementations. A portable application should not use the *cu* utility.

cut

Cut out selected fields of each line of a file.

```
cut -b list [-n] [file ...]
```

```
cut -c list [file ...]
```

```
cut -f list [-d delim][-s][file ...]
```

Issue 5: No functional changes in this issue.

cxref

Generate a C-language program cross-reference table. (**DEVELOPMENT**)

```
cxref [-cs][-o file][-w num] [-D name[=def]]...[-I dir]...[-U name]...
      file ...
```

Issue 5: In the Synopsis, **[-U dir]** is changed to **[-U name]**. This is a minor editorial correction.

date

Write the date and time.

```
date [-u] [+format]
```

```
date [-u] mmddhhmm[[cc]yy]
```

Issue 5: Changes are made for Year 2000 alignment. Specifically, century handling is now added and, if a century is not specified, the interpretation of year ranges is added:

```
mmddhhmm[[cc]yy]
```

Attempt to set the system date and time from the value given in the operand. This is only possible if the user has appropriate privileges and the system permits the setting of the system date and time. The first *mm* is the month (number); *dd* is the day (number); *hh* is the hour (number, 24-hour system); the second *mm* is the minute (number); *cc* is the century and is the first two digits of the year (this is optional); *yy* is the last two digits of the year and is optional. If century is not specified, then values in the range [69-99] refer to years in the twentieth century (1969 to 1999 inclusive), and values in the range [00-68] refer to years in the twenty-first century (2000 to 2068 inclusive).

dd

Convert and copy a file.

```
dd [operand ...]
```

Issue 5: The second paragraph of the **cbs=** description is reworded and marked EX. This is the application of Corrigendum 1170/47 which replaced the paragraph as follows:

“This operand must also be specified if the *conv=* operand is specified with a value of *ascii*, *ebcdic*, or *ibm*. For a *conv=* operand with an *ascii* value, the input is handled as described for the *unblock* value, except that characters are converted to ASCII before any trailing space characters are deleted. For *conv=* operands with *ebcdic* or *ibm* values, the input is handled as described for the *block* value, except that the characters are converted to EBCDIC or IBM EBCDIC, respectively, after any trailing space characters are added.”

A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

delta

Make a delta (change) to an SCCS file. (**DEVELOPMENT**)

```
delta [-nps][-g list][-m mrlist][-r SID][-y[comment]] file...
```

Issue 5: The output format description in the stdout section is corrected. This is a minor editorial correction.

df

Report free disk space.

```
df [-k][-P|-t][file...]
```

Issue 5: No functional changes in this issue.

diff

Compare two files.

```
diff [-c|-e|-f|-C n][-br] file1 file2
```

Issue 5: A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

dircmp

Directory comparison. (**LEGACY**)

```
dircmp [-ds] dir1 dir2
```

Issue 5: This utility is marked LEGACY and may not be available on all implementations. A portable application should not use the *dircmp* utility.

dirname

Return the directory portion of pathname.

```
dirname string
```

Issue 5: No functional changes in this issue.

dis

Disassembler. (**DEVELOPMENT, LEGACY**)

```
dis [-olV][-F function...] [-l string] file...
```

Issue 5: This utility is marked LEGACY and may not be available on all implementations. A portable application should not use the *dis* utility.

du

Estimate file space usage. (**LEGACY**)

```
du [-a| -s][-kx][-r][file ...]
```

Issue 5: This utility is marked LEGACY and may not be available on all implementations. A portable application should not use the *du* utility.

echo

Write arguments to standard output.

```
echo [string ...]
```

Issue 5: In the Options section, the last sentence is changed to indicate that implementations “will not” support any options; in the previous issue this said “need not”. This is the application of Corrigendum 1170/65 which mandates that “Implementations will not support any options” to *echo*. Thus:

```
echo -n
```

will output:

```
-n
```

New applications should use *printf* instead of *echo*.

ed

Edit text.

```
ed [-p string][-s][file]
```

```
ed [-p string][-][file]
```

Issue 5: In the Options section, the meaning of **-s** and **-** is clarified. Specifically, **-** is the same as the **-s** option.

A second Future Direction is added documenting that this utility will change to align with POSIX.2b when finalized.

egrep

Search a file with an ERE pattern. (**LEGACY**)

```
egrep [ -c| -l][-inv] -e pattern_list [file...]
```

```
egrep [ -c| -l][-inv] -f pattern_list [file...]
```

```
egrep [ -c| -l][-inv] pattern_list [file...]
```

Issue 5: This utility is marked LEGACY and may not be available on all implementations. Portable applications should use *grep* instead of *egrep*.

A command invoking the *egrep* utility with the **-e** option specified is equivalent to the command:

```
grep -E [ -c | -l ][-inv] -e pattern_list [file...]
```

A command invoking the *egrep* utility with the **-f** option specified is equivalent to the command:

```
grep -E [ -c | -l ][-inv] -f pattern_list [file...]
```

A command invoking the *egrep* utility with neither the **-e** nor the **-f** option specified is equivalent to the command:

```
grep -E [ -c | -l ][-inv] pattern_list [file...]
```

env

Set the environment for command invocation.

```
env [-i][name=value]... [utility [argument...]]
```

```
env [-][name=value]... [utility [argument...]]
```

Issue 5: No functional changes in this issue.

ex

Text editor.

```
ex [-rR][-l][-s | -v ][-c command]-t tagstring[-w size][file...]
```

```
ex [-rR][-l][- | -v ][+command]-t tagstring[-w size][file...]
```

Issue 5: A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

expand

Convert tabs to spaces.

```
expand [-t tablist][file ...]
```

```
expand [-tabstop][-tab1,tab2,...,tabn][file...]
```

Issue 5: No functional changes in this issue.

expr

Evaluate arguments as an expression.

```
expr operand
```

Issue 5: A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

false

Return false value.

```
false
```

Issue 5: No functional changes in this issue.

fc

Process the command history list.

```
fc [-r][-e editor] [first[last]]
```

```
fc -l[-nr] [first[last]]
```

```
fc -s[old=new][first]
```

Issue 5: A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

fg

Run jobs in the foreground.

```
fg [job_id]
```

Issue 5: No functional changes in this issue.

fgrep

Search a file for a fixed-string pattern. (**LEGACY**)

```
fgrep [ -c | -l ][-invx] -e pattern_list [file...]
```

```
fgrep [ -c | -l ][-invx] -f pattern_list [file...]
```

```
fgrep [ -c | -l ][-invx] pattern_list [file...]
```

Issue 5: This utility is marked LEGACY and may not be available on all implementations. Portable applications should use *grep* instead of *fgrep*.

A command invoking the *fgrep* utility with the **-e** option specified is equivalent to the command:

```
grep -F [ -c | -l ][-invx] -e pattern_list [file...]
```

A command invoking the *fgrep* utility with the **-f** option specified is equivalent to the command:

```
grep -F [ -c | -l ][-invx] -f pattern_list [file...]
```

A command invoking the *fgrep* utility with neither the **-e** nor the **-f** option operand specified is equivalent to the command:

```
grep -F [ -c | -l ][-invx] pattern_list [file...]
```

file

Determine file type.

```
file file ...
```

Issue 5: No functional changes in this issue.

find

Find files.

```
find path... [operand_expression]
```

Issue 5: A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

fold

Filter for folding lines.

```
fold [-bs][-w width][file...]
```

Issue 5: No functional changes in this issue.

fort77

FORTRAN compiler. (**FORTRAN**)

```
fort77 [-c][-g][-L directory]... [-O optlevel][-o outfile][-s][-w]  
operand...
```

Issue 5: No functional changes in this issue.

fuser

List process IDs of all processes that have one or more files open.

```
fuser [ -cfu ] file ...
```

Issue 5: This is a new utility in Issue 5.

The *fuser* utility writes to standard output the process IDs of processes running on the local system that have one or more named files open. For block special devices, all processes using any file on that device are listed.

gencat

Generate a formatted message catalog.

```
gencat catfile msgfile...
```

Issue 5: No functional changes in this issue.

get

Get a version of an SCCS file. (**DEVELOPMENT**)

```
get [-begkmlpst][-c cutoff][-i list][-r SID][-x list] file...
```

```
get [-begkmpst][-c cutoff][-i list][ -l[p]][-r SID][-x list] file...
```

Issue 5: The first format string in the stdout section is corrected. This is a minor editorial correction.

The interpretation of the *YY* component of the **-c *cutoff*** argument is noted as follows:

“Indicate the *cutoff* date-time, in the form:

```
YY[MM[DD[HH[MM[SS]]]]]
```

For the *YY* component, values in the range [69-99] refer to years in the twentieth century (1969 to 1999 inclusive); values in the range [00-68] refer to years in the twenty-first century (2000 to 2068 inclusive).”

getconf

Get configuration values.

```
getconf [ -v specification ] system_var
```

```
getconf [ -v specification ] path_var pathname
```

Issue 5: In the Operands section:

- **NL_MAX** is changed to **NL_NMAX**. This is a minor editorial correction.
- Entries beginning **NL_** are deleted from the list of standard configuration variables.
- The list of variables previously marked **UX** is merged with the list marked **EX**.
- Operands are added to support new Feature Groups: **_XOPEN_REALTIME**, **_XOPEN_REALTIME_THREADS**, and **_XOPEN_LEGACY**.
- Operands are added so that *getconf* can determine supported programming environments:

<i>system_var</i>	<i>confstr()</i> Name Value
PATH	_CS_PATH
XBS5_ILP32_OFF32_CFLAGS	_CS_XBS5_ILP32_OFF32_CFLAGS
XBS5_ILP32_OFF32_LDFLAGS	_CS_XBS5_ILP32_OFF32_LDFLAGS
XBS5_ILP32_OFF32_LIBS	_CS_XBS5_ILP32_OFF32_LIBS
XBS5_ILP32_OFF32_LINTFLAGS	_CS_XBS5_ILP32_OFF32_LINTFLAGS
XBS5_ILP32_OFFBIG_CFLAGS	_CS_XBS5_ILP32_OFFBIG_CFLAGS
XBS5_ILP32_OFFBIG_LDFLAGS	_CS_XBS5_ILP32_OFFBIG_LDFLAGS
XBS5_ILP32_OFFBIG_LIBS	_CS_XBS5_ILP32_OFFBIG_LIBS
XBS5_ILP32_OFFBIG_LINTFLAGS	_CS_XBS5_ILPBIG_OFF32_LINTFLAGS
XBS5_LP64_OFF64_CFLAGS	_CS_XBS5_LP64_OFF64_CFLAGS
XBS5_LP64_OFF64_LDFLAGS	_CS_XBS5_LP64_OFF64_LDFLAGS

<i>system_var</i>	<i>confstr()</i> Name Value
XBS5_LP64_OFF64_LIBS	_CS_XBS5_LP64_OFF64_LIBS
XBS5_LP64_OFF64_LINTFLAGS	_CS_XBS5_LP64_OFF64_LINTFLAGS
XBS5_LPBIG_OFFBIG_CFLAGS	_CS_XBS5_LPBIG_OFFBIG_CFLAGS
XBS5_LPBIG_OFFBIG_LDFLAGS	_CS_XBS5_LPBIG_OFFBIG_LDFLAGS
XBS5_LPBIG_OFFBIG_LIBS	_CS_XBS5_LPBIG_OFFBIG_LIBS
XBS5_LPBIG_OFFBIG_LINTFLAGS	_CS_XBS5_LPBIG_OFFBIG_LINTFLAGS

getopts

Parse utility options.

```
getopts optstring name [arg...]
```

Issue 5: No functional changes in this issue.

grep

Search a file for a pattern.

```
grep [ -E| -F][ -c| -l| -q ][-insvx] -e pattern_list  
[-f pattern_file]...[file...]
```

```
grep [ -E| -F][ -c| -l| -q ][-insvx][-e pattern_list  
-f pattern_file]...[file...]
```

```
grep [ -E| -F][ -c| -l| -q ][-insvx] pattern_list[file...]
```

Issue 5: No functional changes in this issue.

hash

Remember or report utility locations.

```
hash [utility...]
```

```
hash -r
```

Issue 5: No functional changes in this issue.

head

Copy the first part of files.

```
head [-n number][file...]
```

```
head [number][file...]
```

Issue 5: No functional changes in this issue.

iconv

Codeset conversion.

```
iconv -f fromcode -t tocode [file...]
```

Issue 5: No functional changes in this issue.

id

Return user identity.

```
id [user]
id -G[-n] [user]
id -g[-nr] [user]
id -u[-nr] [user]
```

Issue 5: No functional changes in this issue.

ipcrm

Remove a message queue, semaphore set, or shared memory segment identifier.

```
ipcrm [ -q msgid | -Q msgkey | -s semid | -S semkey |
        -m shmid | -M shmkey ] ...
```

Issue 5: This is a new utility added in Issue 5.

The *ipcrm* utility removes zero or more message queues, semaphore sets, or shared memory segments. The interprocess communication facilities to be removed are specified by the options.

Only a user with appropriate privilege is allowed to remove an interprocess communication facility that was not created by or owned by the user invoking *ipcrm*.

ipcs

Report interprocess communication facilities status.

```
ipcs [ -qms ] [ -abcopt ]
```

Issue 5: This is a new utility in Issue 5.

The *ipcs* utility writes information about active interprocess communication facilities.

Without options, information is written in short format for message queues, shared memory segments, and semaphore sets that are currently active in the system.

jobs

Display status of jobs in the current session.

```
jobs [ -l | -p ] [ job_id ... ]
```

Issue 5: No functional changes in this issue.

join

Relational database operator.

```
join [ -a file_number | -v file_number ] [-e string] [-o list] [-t char]
      [-1 field] [-2 field] file1 file2
join [-a file_number] [-e string] [-j field] [-j1 field] [-j2 field]
      [-o list...] [-t char] [-t char] file1 file2
```


Issue 5: No functional changes in this issue.

kill

Terminate or signal processes.

```
kill -s signal_name pid...
```

```
kill -l [exit_status]
```

```
kill [-signal_name] pid...
```

```
kill [-signal_number] pid...
```

Issue 5: No functional changes in this issue.

lex

Generate programs for lexical tasks. (**DEVELOPMENT**)

```
lex -c[-t][ -n| -v][file...]
```

Issue 5: No functional changes in this issue.

line

Read one line. (**LEGACY**)

```
line
```

Issue 5: This utility is marked LEGACY and may not be available on all implementations. Portable applications should use the *read* utility instead of *line*.

link

Call *link()* function.

```
link file1 file2
```

Issue 5: This is a new utility in Issue 5.

lint

Check C-language programs. (**DEVELOPMENT, LEGACY**)

```
lint [-abcpuxv] [-D name=value][-I directory][-L directory]  
      [-o x][-U name] operand...
```

Issue 5: This utility is marked LEGACY and may not be available on all implementations. A portable application should not use the *lint* utility.

ln

Link files.

```
ln [-f] source_file target_file
```

```
ln [-f] source_file... target_dir
```

Issue 5: No functional changes in this issue.

locale

Get locale-specific information.

```
locale [ -a | -m ]
```

```
locale [-ck] name...
```

Issue 5: A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

localedef

Define locale environment.

```
localedef [-c][ -f charmap ][ -i sourcefile ] name
```

Issue 5: No functional changes in this issue.

logger

Log messages.

```
logger string ...
```

Issue 5: No functional changes in this issue.

logname

Return the user's login name.

```
logname
```

Issue 5: No functional changes in this issue.

lp

Send files to a printer.

```
lp [-c][ -d dest ][ -n copies ][ -msw ][ -o option ]... [-t title]
    [file...]
```

Issue 5: No functional changes in this issue.

lpstat

Report printer status information. (**LEGACY**)

```
lpstat [-drst] [-a[list]] [-c[list]] [-o[list]] [-p[list]] [-u[list]]
    [-v[list]] [ID...]
```

Issue 5: This utility is marked LEGACY and may not be available on all implementations. A portable application should not use the *lpstat* utility.

ls

List directory contents.

```
ls [-CFRacdilqrtul][-fgmnopsx][file...]
```

Issue 5: A second Future Direction is added documenting that this utility will change to align with POSIX.2b when finalized.

m4

Macro processor. (**DEVELOPMENT**)

```
m4 [-s][-D name[=val]]...[-U name]... file...
```

Issue 5: The phrase “the defined text for macros written by the `dumpdef` macro” is added to the Description of `stderr`, and the description of **`dumpdef`** is updated to indicate that output is written to standard error. The description of **`eval`** is updated to indicate that the list of excluded C operators includes unary `&` and dot `(.)`. In the description of **`ifdef`**, the phrase “and it is not defined to be zero” is deleted.

mail

Send or read mail. (**LEGACY**)

```
mail [-e] [-f file]
```

```
mail [-e|-p][-qr][-f file]
```

```
mail [-t] name ...
```

Issue 5: This utility is marked LEGACY and may not be available on all implementations. Portable applications should use the *mailx* utility.

mailx

Process messages.

Send mode:

```
mailx [-s subject] address...
```

Receive mode:

```
mailx -e
```

```
mailx [-HiNn][-F][-u user]
```

```
mailx -f[-HiNn][-F][file]
```

Issue 5: The description of the `EDITOR` environment variable is changed to indicate that *ed* is the default editor if this variable is not set. In previous issues, this default was not stated explicitly at this point, but was implied later in the text.

A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

make

Maintain, update, and regenerate groups of programs. (**DEVELOPMENT**)

```
make [-einpqrst][-f makefile]...[-k|-S][macro=name]...
    [target_name...]
```

Issue 5: A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

man

Display system documentation.

```
man [-k] name...
```

Issue 5: A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

mesg

Permit or deny messages.

```
mesg [y|n]
```

Issue 5: No functional changes in this issue.

mkdir

Make directories.

```
mkdir [-p][-m mode] dir...
```

Issue 5: A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

mkfifo

Make FIFO special files.

```
mkfifo [-m mode] file...
```

Issue 5: No functional changes in this issue.

more

Display files on a page-by-page basis.

```
more [-ceisu][-n number][-p command][-t tagstring][file...]
```

```
more [-ceisu][-n number][+command][-t tagstring][file...]
```

Issue 5: A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

mv

Move files.

```
mv [-fi] source_file target_file
```

```
mv [-fi] source_file... target_file
```

Issue 5: No functional changes in this issue.

newgrp

Change to a new group.

```
newgrp [-l][group]
```

```
newgrp [-][group]
```

Issue 5: No functional changes in this issue.

nice

Invoke a utility with an altered system scheduling priority.

```
nice [-n increment] utility [argument...]
```

```
nice [-increment] utility [argument...]
```

Issue 5: No functional changes in this issue.

nl

Line numbering filter.

```
nl [-p][-b type][-d delim][-f type][-h type][-i incr][-l num][-n format]  
    [-s sep][-v startnum][-w width][file]
```

Issue 5: The option [**-f** type] is added to the Synopsis. The option descriptions are presented in alphabetic order. The description of **-bt** is changed to “Number only non-empty lines”.

nm

Write the name list of an object file. (**DEVELOPMENT**)

```
nm [-APv][-efox][-g|-u][-t format] file...
```

Issue 5: No functional changes in this issue.

nohup

Invoke a utility immune to hangups.

```
nohup utility [argument...]
```

Issue 5: No functional changes in this issue.

od

Dump files in various formats.

```
od [-v][-A address_base][-j skip][-N count][-t type_string]...
    [file...]
```

```
od [-bcdosx][file] [[+]offset[.][b]]
```

Issue 5: In the description of the **-c** option, the phrase “This is equivalent to **-t c.**” is deleted.

A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

pack

Compress files. (**LEGACY**)

```
pack [-f][-] file...
```

Issue 5: This utility is marked LEGACY and may not be available on all implementations. Portable applications should use the *compress* utility.

paste

Merge corresponding or subsequent lines of files.

```
paste [-s][-d list] file...
```

Issue 5: No functional changes in this issue.

patch

Apply changes to files.

```
patch [-blNR][ -c| -e| -n][-d dir][-D define][-i patchfile]
    [-o outfile][-p num][-r rejectfile][file]
```

Issue 5: A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

pathchk

Check pathnames.

```
pathchk [-p] pathname...
```

Issue 5: No functional changes in this issue.

pax

Portable archive interchange.

```
pax [-cdnv][-f archive][-s replstr]...[pattern...]
```

```
pax -r[-cdiknuv][-f archive][-o options]...[-p string]...
    [-s replstr]...[pattern...]
```

```
pax -w[-dituvX][-b blocksize][[-a][-f archive][-o options]...
    [-s replstr]...[-x format][file...]
```

```
pax -r -w[-diklntuvX][-p string...] [-s replstr]...[file...]
directory
```

Issue 5: A note is added to the Application Usage section indicating that the *cpio* and *tar* formats can only support files up to 8 gigabytes in size.

pcat

Expand and concatenate files. (**LEGACY**)

```
pcat file...
```

Issue 5: This utility is marked LEGACY and may not be available on all implementations. A portable application should not use the *pcat* utility, but use *compress*, *uncompress*, and *zcat*.

pg

File perusal filter for soft-copy terminals. (**LEGACY**)

```
pg[-number][-cefns][-p string][+linenumber][+/re/][file...]
```

Issue 5: This utility is marked LEGACY and may not be available on all implementations. Portable applications should not use the *pg* utility, but use the *more* utility instead.

pr

Print files.

```
pr [+page][-column][-adFmrt][-e[char][gap]] [-h header][-i[char][gap]]
  [-l lines][-n[char][width]] [-o offset][-s[char]] [-w width][-fp]
  [file...]
```

Issue 5: No functional changes in this issue.

printf

Write formatted output.

```
printf format[argument...]
```

Issue 5: No functional changes in this issue.

prs

Print an SCCS file. (**DEVELOPMENT**)

```
prs [-a][-d dataspec][-r[SID]] file...
```

```
prs [ -e | -l ] -c cutoff [-d dataspec] file...
```

```
prs [ -e | -l ] -r[SID][-d dataspec]file...
```

Issue 5: The phrase “in which keyword substitution is followed by a newline” is deleted from the end of the second paragraph of **Data Keywords** in the stdout section.

The interpretation of the YY component of the **-c *cutoff*** argument is noted.

ps

Report process status.

```
ps [-aA][--defl][--G grouplst][--o format]...[-p proclst][-t termlst]
    [-U userlist][--g grouplist][--n namelist][--u userlist]
```

Issue 5: No functional changes in this issue.

pwd

Return working directory name.

```
pwd
```

Issue 5: No functional changes in this issue.

read

Read a line from standard input.

```
read [-r] var...
```

Issue 5: No functional changes in this issue.

renice

Set system scheduling priorities of running processes.

```
renice [--n increment][ -g| -p| -u] ID...
renice nice_value[-p] pid...[-g gid...][-p pid...][-u user...]
renice nice_value -g gid...[-g gid...][-p pid...][-u user...]
renice nice_value -u user...[-g gid...][-p pid...][-u user...]
```

Issue 5: In the Synopsis, an ellipsis is added to the **-u** option in all three obsolescent forms.

rm

Remove directory entries.

```
rm [-fiRr] file...
```

Issue 5: A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

rmidel

Remove a delta from an SCCS file. **(DEVELOPMENT)**

```
rmidel -r SID file...
```

Issue 5: No functional changes in this issue.

rmdir

Remove directories.

```
rmdir [-p] dir...
```

Issue 5: No functional changes in this issue.

sact

Print current SCCS file-editing activity. (**DEVELOPMENT**)

```
sact file...
```

Issue 5: No functional changes in this issue.

sccs

Front end for the SCCS subsystem. (**DEVELOPMENT**)

```
sccs [-r][-d path][-p path] command [options...][operands...]
```

Issue 5: No functional changes in this issue.

sed

Stream editor.

```
sed [-n] script[file...]
```

```
sed [-n][-e script...][-f script_file...][file...]
```

Issue 5: A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

sh

Shell, the standard command language interpreter.

```
sh [-abCefimnuvx][-o option][+abCefmnuvx][+o option]  
    [command_file [argument...]]
```

```
sh [-abCefimnuvx][-o option][+abCefmnuvx][+o option]command_string  
    [command_name [argument...]]
```

```
sh -s[-abCefimnuvx][-o option][+abCefmnuvx][+o option][argument...]
```

Issue 5: A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

Text is added to the DESCRIPTION for the Large File Summit Submission, specifically:

- Pathname expansion will not fail due to the size of a file.
- Shell input and output redirections will have an implementation-dependent offset maximum that will be established in the open file description.

sleep

Suspend execution for an interval.

```
sleep time
```

Issue 5: No functional changes in this issue.

sort

Sort, merge, or sequence check text files.

```
sort [-m][-o output][-bdfinru][-t char][-k keydef]...[-z recsz]
    [file...]
sort -c [-bdfinru][-t char][-k keydef]...[-z recsz][file...]
sort [-mu][-o output][-bdfir][-t char][+pos1[-pos2]]...[-z recsz]
    [file...]
sort -c[-u][-bdfinr][-t char][+pos1[-pos2]]...[-z recsz][file]
```

Issue 5: No functional changes in this issue.

spell

Find spelling errors. (**LEGACY**)

```
spell [-bvx][+local_file][file...]
```

Issue 5: This utility is marked LEGACY and may not be available on all implementations. Portable applications should not use the *spell* utility.

split

Split files into pieces.

```
split [-l line_count][-a suffix_length][file[name]]
split -b n[k|m][-a suffix_length][file[name]]
split [-line_count][-a suffix_length][file[name]]
```

Issue 5: No functional changes in this issue.

strings

Find printable strings in files.

```
strings [-a][-t format][-n number][file...]
strings [-][-t format][-number][file...]
```

Issue 5: No functional changes in this issue.

strip

Remove unnecessary information from executable files. (**DEVELOPMENT**)

```
strip file...
```

Issue 5: No functional changes in this issue.

stty

Set the options for a terminal.

```
stty [ -a| -g]
```

```
stty operands
```

Issue 5: The description of **tabs** is clarified.

A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

sum

Print checksum and block count of a file. (**LEGACY**)

```
sum [-r][file...]
```

Issue 5: This utility is marked LEGACY and may not be available on all implementations. Portable applications should use the *cksum* utility.

tabs

Set terminal tabs.

```
tabs [ -n| -a| -a2| -c| -c2| -c3| -f| -p| -s| -u][+m[n]]  
      [-T type]
```

```
tabs [-T type][ +[n]] n1[,n2,...]
```

Issue 5: No functional changes in this issue.

tail

Copy the last part of a file.

```
tail [-f][ -c number| -n number] [file]
```

```
tail -[number][b|c|l][f] [file]
```

```
tail +[number][b|c|l][f] [file]
```

Issue 5: No functional changes in this issue.

talk

Talk to another user.

```
talk address [terminal]
```

Issue 5: No functional changes in this issue.

tar

File archiver. (**LEGACY**)

```
tar key [file...]
```

Issue 5: A note is added to the Application Usage section indicating that the *tar* format can only support files up to 8 gigabytes in size.

This utility is marked LEGACY and may not be available on all implementations. Portable applications should use the *pax* utility instead of *tar*.

tee

Duplicate standard input.

```
tee [-ai][file...]
```

Issue 5: No functional changes in this issue.

test

Evaluate expression.

```
test [expression]
```

```
[ [expression] ]
```

Issue 5: A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

time

Time a simple command.

```
time [-p] utility [argument...]
```

Issue 5: No functional changes in this issue.

touch

Change file access and modification times.

```
touch [-acm][ -r ref_file| -t time] file...
```

```
touch [-acm][date_time] file...
```

Issue 5: No functional changes in this issue.

tput

Change terminal characteristics.

```
tput [-T type] operand...
```

Issue 5: No functional changes in this issue.

tr

Translate characters.

```
tr [-cs] string1 string2
```

```
tr -s[-c] string1
```

```
tr -d[-c] string1
```

```
tr -ds[-c] string1 string2
```

Issue 5: No functional changes in this issue.

true

Return true value.

```
true
```

Issue 5: No functional changes in this issue.

tsort

Topological sort.

```
tsort [file]
```

Issue 5: No functional changes in this issue.

tty

Return user's terminal name.

```
tty
```

```
tty -s
```

Issue 5: The Synopsis is changed to indicate two forms of the command, with the second form marked as obsolete. This is a clarification and does not change the functionality published in previous issues.

type

Write a description of command type.

```
type name...
```

Issue 5: No functional changes in this issue.

ulimit

Set or report file size limit.

```
ulimit [-f][blocks]
```

Issue 5: No functional changes in this issue.

umask

Get or set the file mode creation mask.

```
umask [-S][mask]
```

Issue 5: No functional changes in this issue.

unalias

Remove alias definitions.

```
unalias alias-name...
```

```
unalias -a
```

Issue 5: No functional changes in this issue.

uname

Return system name.

```
uname [snrvma]
```

Issue 5: No functional changes in this issue.

uncompress

Expand compressed data.

```
uncompress [-cfv][file...]
```

Issue 5: No functional changes in this issue.

unexpand

Convert spaces to tabs.

```
unexpand [ -a| -t tablist][file...]
```

Issue 5: No functional changes in this issue.

unget

Undo a previous get of an SCCS file. (**DEVELOPMENT**)

```
unget [-ns][-r SID] file...
```

Issue 5: No functional changes in this issue.

uniq

Report or filter out repeated lines in a file.

```
uniq [-c|-d|-u][-f fields][-s char][input_file [output_file]]
```

```
uniq [-c|-d|-u][-n][+m][input_file [output_file]]
```

Issue 5: No functional changes in this issue.

unlink

Call the *unlink()* function

```
unlink file
```

Issue 5: This is a new utility in Issue 5.

The *unlink* utility performs the function call:

```
unlink(file);
```

unpack

Expand files. (**LEGACY**)

```
unpack file...
```

Issue 5: This utility is marked LEGACY and may not be available on all implementations. Portable applications should use the *compress* and *uncompress* utilities.

uucp

System-to-system copy.

```
uucp [-cCdfjmr][-n user] source-file... destination-file
```

Issue 5: No functional changes in this issue.

uudecode

Decode a binary file.

```
uudecode [file]
```

Issue 5: No functional changes in this issue.

uuencode

Encode a binary file.

```
uuencode [file] decode_pathname
```

Issue 5: No functional changes in this issue.

uulog

Query system-to-system transaction log. (**LEGACY**)

```
uulog [-s system]
```

Issue 5: This utility is marked LEGACY and may not be available on all implementations. Portable applications should not use this utility.

uuname

List names of other known *uucp* systems. (**LEGACY**)

```
uuname [-l]
```

Issue 5: This utility is marked LEGACY and may not be available on all implementations. Portable applications should not use this utility.

uupick

Receive public system-to-system file copies. (**LEGACY**)

```
uupick [-s system]
```

Issue 5: This utility is marked LEGACY and may not be available on all implementations. Portable applications should not use this utility.

uustat

uucp status inquiry and job control.

```
uustat [ -q| -k jobid| -r jobid]
```

```
uustat [-s system][-u user]
```

Issue 5: No functional changes in this issue.

uuto

Send public system-to-system file copies. (**LEGACY**)

```
uuto [-mp] source-file... destination
```

Issue 5: This utility is marked LEGACY and may not be available on all implementations. Portable applications should not use this utility.

uux

Remote command execution.

```
uux [-np] command-string
```

```
uux [-jnp] command-string
```

```
uux [-][-jn] command-string
```

Issue 5: No functional changes in this issue.

val

Validate SCCS files. (**DEVELOPMENT**)

```
val -
```

```
val [-s][-m name][-r SID][-y type] file...
```

Issue 5: No functional changes in this issue.

vi

Screen-oriented (visual) display editor.

```
vi [-rR][-l][-c command][-t tagstring][-w size][file...]
```

```
vi [-rR][-l][+command][-t tagstring][-w size][file...]
```

Issue 5: A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

wait

Await process completion.

```
wait [pid...]
```

Issue 5: No functional changes in this issue.

wc

Word, line, and byte or character count.

```
wc [-c|-m][-lw][file...]
```

Issue 5: No functional changes in this issue.

what

Identify SCCS files. (**DEVELOPMENT**)

```
what [-s] file...
```

Issue 5: No functional changes in this issue.

who

Display who is on the system.

```
who [-mu]-s[-bHlprt][file]
```

```
who [-mTu][-abdHlprt][file]
```

```
who -q [file]
```

```
who am i
```

```
who am I
```

Issue 5: No functional changes in this issue.

write

Write to another user.

```
write user_name [terminal]
```

Issue 5: A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

xargs

Construct argument lists and invoke utility.

```
xargs [-t][-p][-e[eofstr]][-E eofstr][-I replstr][-i[replstr]]  
      [-L number][-l[number]][-n number][-x][-s size]  
      [utility [argument...]]
```

Issue 5: A second Future Direction is added documenting that this utility will change to align with POSIX.2b when finalized.

yacc

Yet another compiler compiler. (**DEVELOPMENT**)

```
yacc [-dltv][-b file_prefix][-p sym_prefix] grammar
```

Issue 5: A Future Directions section has been added documenting that this utility will change to align with POSIX.2b when finalized.

zcat

Expand and concatenate data.

```
zcat [file...]
```

Issue 5: No functional changes in this issue.